Remarks

1. Introduction

Claims 1-69 are pending.

2. Double Patenting

Claims 1, 16, 48, 51, and 54 of the present application were provisionally rejected on the ground of statutory anticipatory double patenting as being unpatentable over claims 1, 12, 23, 53, 72, and 73 of copending Application No. 10/684,043, (hereinafter referred to as "the '043 application"). Claims 4-15 of the present application were provisionally rejected on the ground of statutory anticipatory double patenting as being unpatentable over claims 3, 5, 31-32, 8, and 34-40 of the '043 application. Claims 20-21 and 25-30 of the present application were provisionally rejected on the ground of statutory anticipatory double patenting as being unpatentable over claims 3, 5, 31-32, 8 and 34-36 of the '043 application. Claims 49, 52, and 67 of the present application were provisionally rejected on the ground of statutory anticipatory double patenting as being unpatentable over claim 28 of the '043 application. . Claims 62-65 of the present application were provisionally rejected on the ground of statutory anticipatory double patenting as being unpatentable over claims 3, 31, 34, and 40 of the '043 application.

Claims 1, 16, 48, 51, and 54 of the present application were provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 16 of copending Application No. 10/684,222, (hereinafter referred to as "the '222 application").

Applicants do not believe that the anticipatory double patenting rejection is proper. The claims of the '043 application are directed to the selection of a loudspeaker location or directed to loudspeaker configuration. See the following independent claims from the '043 application:

claims 1, 23 ("selecting at least one loudspeaker location based on the statistical analysis");

claim 12 ("instructions for determining potential loudspeaker locations in the audio system");

claim 21 ("the processor . . . recommending at least one of the potential loudspeaker location based on the statistical analysis");

claim 53 ("instructions for recording potential loudspeaker locations");

claim 72 ("logic for recording potential loudspeaker locations");

claim 73 ("means for determining potential loudspeaker configurations for the audio system"); and

claim 74 ("processor means for determining potential loudspeaker configurations for the audio system").

In contrast, the present application is directed to selecting a number of loudspeakers for the audio system or selecting a type of loudspeaker. See the following independent claims from the present application:

claim 1 ("selecting the number of speakers based on the statistical analysis");

claim 16 ("selecting the number of speakers from the potential number of speakers based on the statistical analysis");

claim 48 ("instructions for recording a plurality of potential numbers of speakers" and "instructions for modifying the transfer functions based on the plurality of potential numbers of speakers in order to generate predicted transfer functions for each of the plurality of potential numbers of speakers");

claim 51 ("logic for recording a plurality of potential numbers of speakers" and "logic for modifying the transfer functions based on the plurality of potential numbers of speakers in order to generate predicted transfer functions for each of the plurality of potential numbers of speakers");

claim 54 ("selecting at least one type of speaker based on the statistical analysis"); and

claim 66 ("instructions for determining potential types of speakers" and "instructions for modifying the transfer functions based on the potential types of speakers and based on the potential speaker locations in order to generate predicted transfer functions").

Therefore, Applicants do not believe that the anticipatory double patenting rejection is proper since the claims in the two applications are of differing scope. Moreover, Applicants state that with respect to the obviousness-type double patenting rejection, upon receiving allowable subject matter, they will submit a terminal disclaimer.

3. Rejections based on 35 U.S.C. §§102, 103

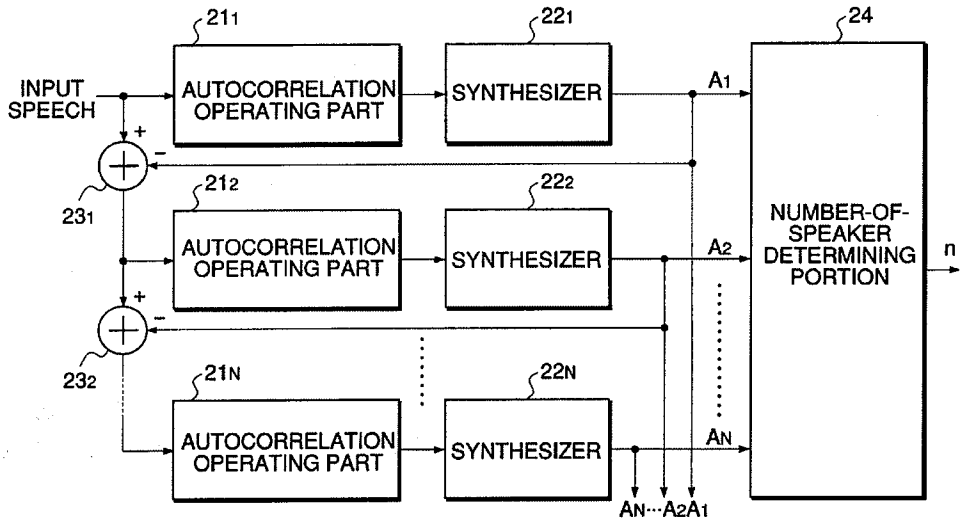
Claims 1-8, 11-12, 14, 16-27, 30-32, 42-44, 46-47, 50, 53-63, and 66-68 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent Publication No. 2003/0179891

A1 (Rabinowitz et al) and further in view of U.S. Patent No. 6,061,648 (Saito et al.). Claims 48-49 and 51-52 were rejected under 35 U.S.C. §102(e) as being anticipated by Rabinowitz. Claims 13 and 33 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabinowitz and Saito and further in view of U.S. Patent No. 6,195,435 (Kitamura). Claims 37, 39-41 and 45 were rejected under 35 U.S.C. §103(a) as being unpatentable over Rabinowitz and Saito and further in view of U.S. Patent No. 7,184,556 (Johnson et al.) and further in view of . U.S. Patent Application No. 2002/0196951 (Tsai).

As shown above, claims 1, 16, 48, and 51 recite selecting a number of speakers based on a statistical analysis. Neither the Rabinowitz reference nor the Saito reference teach or suggest selecting a number of speakers based on a statistical analysis. The Rabinowitz reference teaches that prior to any analysis, the number of speakers is known. There is no "potential" number of speakers in the system. Instead, the Rabinowitz reference teaches that there is a single, known number of speakers. For example, the Rabinowitz reference teaches that the audio system include 5 speakers. The Rabinowitz reference does not teach that the statistical analysis is used to determine that 4 speakers or 6 speakers provides a better audio response. Rather, the Rabinowitz reference prior to the statistical analysis determines before the statistical analysis that 5 speakers will be used. Nothing in the Rabinowitz reference teaches that the statistical analysis will change that number. Therefore, the Rabinowitz reference does not teach any statistical analysis on "potential" loudspeaker configuration and does not teach selecting the number of speakers "based on the statistical analysis."

Similarly, the Saito reference fails to teach selecting a number of speakers for an audio system based on any statistical analysis. The Office Action cites that the Saito reference teaches selecting a number of speakers based on a statistical analysis citing the following in the Saito reference: Fig. 4 and col. 6, lines 48-57 (reproduced below):

FIG.4



A number-of-speaker determining block 24 selects source speech signals A_1 -A_n each having an amplitude that is larger than a predetermined amplitude, from the source speech signals is A_1 -A_n produced by the synthesizers 22_1 -22_N, and counts the number of the selected source speech signals A_1 -A_n to output "n" as the number of speakers. Alternatively, the number of speakers n may be determined depending upon whether an autocorrelation parameter is smaller than a certain value.

As clearly taught in the cited references above (and other sections in the Saito reference), the "number-of-speaker determining block 24" determines how many speakers to output a signal on. In other words, a input speech coded signal is analyzed to determine how many speakers to output the signal on. It does not relate, even remotely, to how to **configure** an audio system. Therefore, the Saito reference has absolutely no relevance to the claims as presented. Therefore, claims 1, 16, 48, and 51 are patentable over the cited references.

As shown above, claims 54 and 66 recite selecting a type of speaker based on a statistical analysis. The Office Action solely relies on the rejection of claim 1 in rejecting claims 54 and 66. Applicants fail to understand this rejection, particularly given that claims 54 and 66 relate to a "type" of speaker for selection (in contrast to the limitations recited in claim 1). As a general matter, none of the references cited (including the Rabinowitz and Saito references) teach uses a "type" of speaker as a parameter in the statistical analysis for configuring the system. Therefore, for this reason alone, claims 54 and 66 are patentable over the cited art.

The Office Action further rejected claim 5 as being obvious in view of the Rabinowitz and Saito references. The Office Action acknowledges that the Rabinowitz and Saito references fails to teach the limitation claimed in claim 5. However, the Office Action takes "Official

Notice" "that the limitation of analyzing the plurality of frequencies less than 120 Hz is simply the inventor's preference." Applicants respectfully disagree that analyzing frequencies of less than 120 Hz is merely inventor preference. In support of this, Applicants submit the declaration of both of the inventors (this declaration was submitted in U.S. Application No. 10/684,222). As the inventors' state, one application of the present invention is to generate predicted transfer functions at a plurality of listening positions and statistically analyze the predicted transfer functions at the plurality of listening positions (such as statistically analyzing for flatness across the listening positions in order to select a configuration of the system to improve flatness from seat-to-seat). See Declaration of Inventors, ¶4. Applying this predicting/analyzing methodology is particularly advantageous at lower frequencies, such as at less than 120 Hz. In particular, because the lower frequencies have a longer wavelength, these lower frequencies may be significantly different for a first listener (at a first listening position) than for a second listener (at a second listening position) hears. Reducing the seat-to-seat variation (particularly at the lower frequencies) between the first and second listening position may thus have a significant effect, and is not merely the inventor's preference.

The Office Action further rejected claim 8 as being obvious in view of the Rabinowitz and Saito references. See also claims 11, 14, 27, 30-31, 34, and 46-47. The Office Action acknowledges that the Rabinowitz and Saito references fails to teach the limitation claimed in claim 8. However, the Office Action takes "Official Notice" "that the concept of doing statistical analysis from the group consisting of mean spatial variance, mean standard deviation, mean spatial envelope, and mean spatial maximum average is commonly known in the art . . . ." The inventors disagree that using these types of statistical analyses (such as mean spatial variance, mean standard deviation, mean spatial envelope, and mean spatial maximum average) in order to reduce seat-to-seat variation is commonly known. These particular types of statistical analyses provide different insights into the seat-to-seat variation, and therefore provide different ways to examine (and reduce) the seat-to-seat variation. See Declaration of Inventors, ¶5. Further, the Rabinowitz and Saito references, used in the Office Action to reject the claims, supports the notion that these types of analyses (in this context) are not known.

The Office Action further rejected claim 44 as being obvious in view of the Rabinowitz and Saito references. The Office Action acknowledges that the Rabinowitz and Saito references fails to teach the limitation claimed in claim 44. However, the Office Action takes "Official

Notice" "that the limitation of examining for the predetermine frequencies below 50 Hz, is simply the inventor's preference." Applicants respectfully disagree that analyzing frequencies of less than 50 Hz is merely inventor preference. As stated above, one application of the present invention is to generate predicted transfer functions at a plurality of listening positions and statistically analyze the predicted transfer functions at the plurality of listening positions (such as statistically analyzing for flatness across the listening positions in order to select a configuration of the system to improve flatness from seat-to-seat). See Declaration of Inventors, ¶4. Applying this predicting/analyzing methodology is particularly advantageous at lower frequencies, such as at less than 50 Hz. Reducing the seat-to-seat variation (particularly at the lower frequencies) between the first and second listening position may thus have a significant effect, and is not merely the inventor's preference. Therefore, applicants respectfully request the rejection be withdrawn.

The Office Action further rejected claims 13 and 33 as being obvious in view of the Rabinowitz, Saito and Kitamura references. Claims 13 and 33 recite the following limitation: where a number of speakers for a specific predicted transfer function is selected when the specific predicted transfer function has fewer differences in overall sound pressure level among the plurality of listening positions than other predicted transfer functions. The Office Action states that the Kitamura reference teaches this limitation, citing Figures 1-3 and col. 4 [0031] (reproduced below):

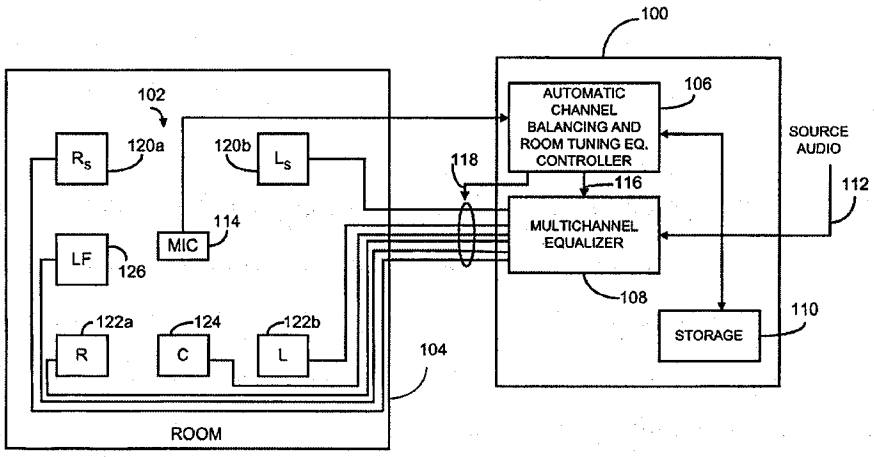


FIG. 1

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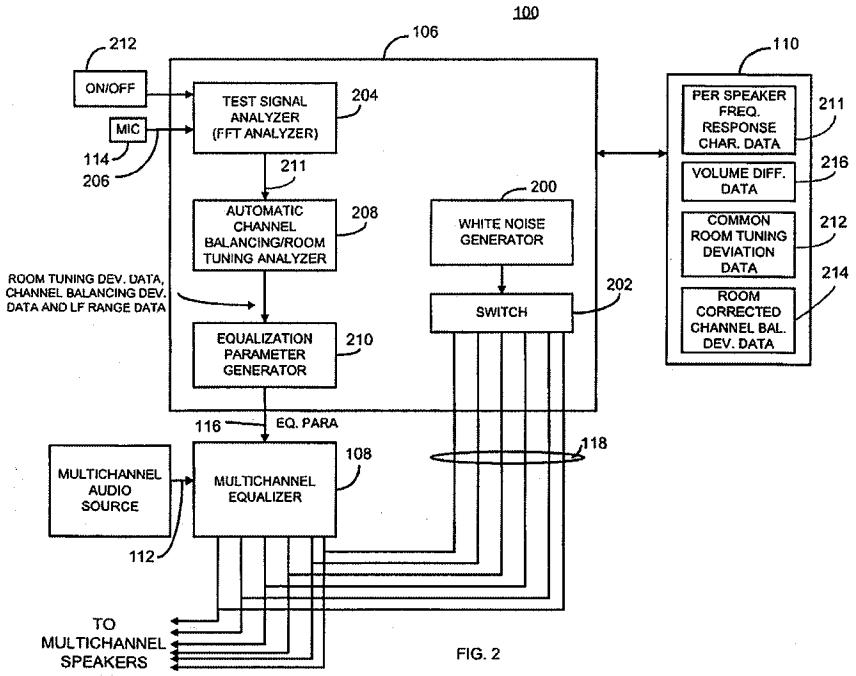


FIG. 2

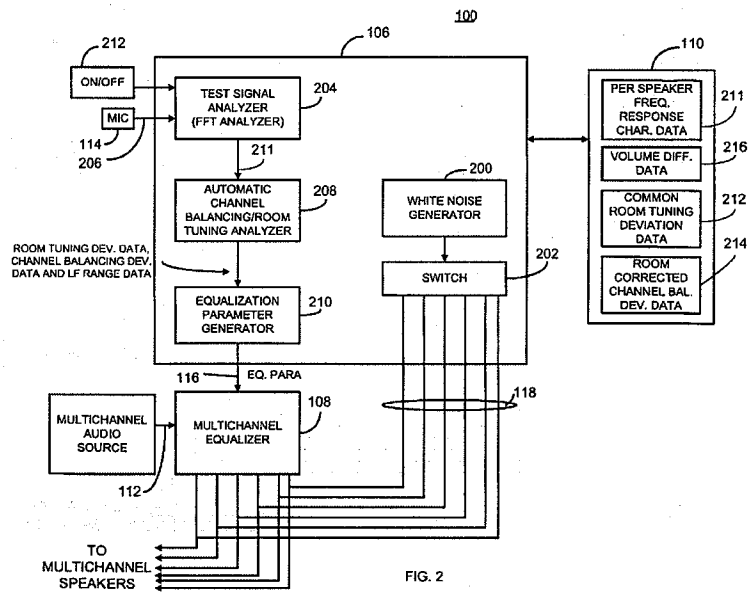


FIG. 2

The automatic channel balancing and room tuning equalization controller 106 also includes an automatic channel balancing and room tuning analyzer 208 and an equalizer parameter generator 210. The automatic channel balancing and room tuning analyzer 208 receives frequency response characteristic data 211 on a per speaker basis and generates upon analyzing the information, common room tuning deviation data 212, room corrected channel deviation data 214, and low frequency range data as will be described below. Based on this information, the equalizer parameter generator 210 generates equalization filter parameters 116, such as finite impulse response filter coefficients and delay coefficients for the multi-channel equalizer 108.

Col. 4, lines 35-47. As an initial matter, Applicants do not understand the citation to "col. 4[0031]". Regardless, the Kitamura reference teaches an equalization controller for "channel balancing" of an existing system. In other words, the Kitamura reference does not teach selecting a number of speakers based on any analysis. Rather, the number of speakers in the Kitamura reference is preset and unchangeable. The Kitamura reference thus simply attempts to balance the channels for the predetermined number of speakers that are in the system. Therefore, the Kitamura reference bears little relevance to the limitations recited in claims 13 and 33.

The Office Action further rejected claim 37 as being obvious in view of the Rabinowitz, Saito and Tsai references. See also claims 39-41 and 45. Claim 37 recites "where a number of speakers for a specific transfer function is selected when the specific transfer function has greater efficiency than other predicted transfer functions." The Office Action states that the Tsai reference teaches this limitation citing Figure 2 and paragraphs [0004], [0015] and [0016] (reproduced below):

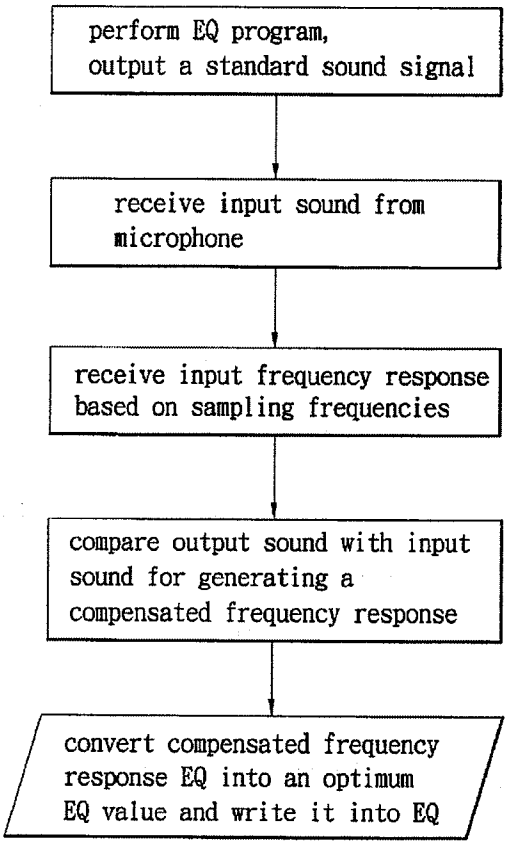


FIG. 2

[0002] As times revolves especially in recent decades the progress of technology has been significant. As a result, more and more people involve in a bustling daily life. For increasing work efficiency and improving living standard, various electronic devices have been developed such as electronic dictionary, electronic book, personal digital assistant (PDA), mobile phone, etc. And in turn, more and more people rely on such electronic devices in their daily life and even become an indispensable part in some people' daily life. Hence, having a high quality electronic device has become a common requirement among users.

[0015] At this time, CPU 20 will perform a frequency response matching on the received sound data with respect to the ideal frequency response data based on a plurality of sampling frequencies as shown in FIG. 2 again. Then CPU 20 calculates a set of equalization tuning gains corresponding to frequency response compensation performed in speaker 10 in each of the plurality of sampling frequencies. The obtained gains are further sent to digital equalizer 40 for storing. Hence, digital equalizer 40 may automatically perform a frequency response equalization tuning on the speaker 10. As a result, the output sound signals, in the audible frequency range of 20 Hz and 20 KHz, are

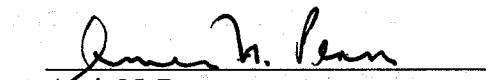
> always maintained at an optimum frequency response state conformed to the ideal frequency response values of FIG. 3.
>
> [0016] In brief, after speaker 10 is installed in electronic device, power of the electronic device is then turned on. By utilizing the invention, it is possible of automatically detecting and calculating equalization tuning gains in the audible frequency range of 20 Hz and 20 KHz. Hence, digital equalizer 40 may automatically perform a frequency response tuning on the speaker 10. In view of above, in the electronic device of the invention after the installation of speaker, a technician does not have to perform a tedious testing process on output sound of one of a plurality of different sampling frequencies by a test instrument. Nor does the technician have to manually tune resistance and capacitance of a coupled equalizer repeatedly. To the contrary, the invention can tune the output sound signals of speaker to an optimum frequency response state.

As shown from the above-excerpts, the Tsai reference merely teaches equalization for "an optimum frequency response state." There is no teaching (or even a suggestion) about selecting a number of speakers for this "optimum frequency response state." This is in contrast to the limitation recited in claim 37. Further, the Tsai reference does not include any efficiency criteria for this "optimum frequency response state," in contrast to the limitation recited in claim 37. Therefore, the claims as presented are patentable over the cited references.

4. Conclusion

The Examiner is invited to contact the undersigned attorneys for the Applicant via telephone if such communication would expedite this application.

Respectfully submitted,



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